

1                   **CLAIMS:**

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3           1. A computer-readable medium having a program module with  
4 computer-executable instructions that, when executed by a computer, performs a  
5 method comprising:

6                   obtaining an omnibus signal comprising multiple input signals mixed  
7 together, wherein the one or more the multiple input signals potentially may have  
8 an embedded signal therein;

9                   testing the omnibus signal to determine if the omnibus signal includes an  
10 embedded signal therein.

11           2. A medium as recited in claim 1, wherein the method further  
12 comprises locating one of the multiple input signals that has an embedded signal  
13 therein.

14           3. A medium as recited in claim 1, wherein the multiple signals are  
15 passed through and consumed by one or more computer-executable program  
16 modules, the method further comprises locating one of the multiple input signals  
17 that has an embedded signal therein, the locating occurring within about thirty  
18 seconds or less of consumption of the located signal.

19           4. A medium as recited in claim 1, wherein the method further  
20 comprises:

21                   locating one of the multiple input signals that has an embedded signal  
22 therein;

indicating the located signal.

5. A medium as recited in claim 1, wherein the method further comprises:

locating one of the multiple input signals that has an embedded signal therein;

generating a notification based upon the locating.

6. A medium as recited in claim 1, wherein the method further comprises:

locating one of the multiple input signals that has an embedded signal therein;

impairing the located signal.

7. A medium as recited in claim 1, wherein the method further comprises:

locating one of the multiple input signals that has an embedded signal therein;

muting the located signal when that signal is an audio signal.

8. A medium as recited in claim 1, wherein the method further comprises:

locating one of the multiple input signals that has an embedded signal therein;

impairing one or more of the multiple input signals during the locating;

1                   when the one of the multiple input signals with an embedded signal therein  
2 is located by the locating, impairing only the located signal.

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4           **9.**       A medium as recited in claim 1, wherein each of the multiple input  
5 signals of the omnibus signal may potentially have an embedded signal therein,  
6 the multiple signals being mixed together into the omnibus signal and in a tree-like  
7 organizational structure with each of the multiple input signals is a “leaf” in the  
8 tree-like organizational structure and each “leaf” represents one of the multiple  
9 input signals that is unmixed with other signals.

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11           **10.**      A medium as recited in claim 1, if the testing finds an embedded  
12 signal in the omnibus signal, then the method further comprises performing a tree-  
13 search of the tree-like organizational structure to locate which one of the multiple  
14 input signals has an embedded signal therein.

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16           **11.**      A medium as recited in claim 1, if the testing finds an embedded  
17 signal in the omnibus signal, then the method further comprises progressively  
18 “walking” up the tree-like organizational structure and testing the signal at each  
19 “branch” or “leaf” encountered in the walk up the tree-like organizational structure  
20 to determine if the signal at that branch or leaf includes an embedded signal  
21 therein.

1           **12.** A medium as recited in claim 1, wherein the type of the one or more  
2           the multiple input signals is selected from a group consisting of image, audio,  
3           video, multimedia, software, metadata, and data.

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5           **13.** An operating system comprising a medium as recited in claim 1.

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7           **14.** A computing device comprising:  
8           an input device for receiving one or more input signals;  
9           a medium as recited in claim 1.

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2       **15.** A method for dynamic detecting of robust embedded-signals in a  
3 multiple-signal environment, the method comprising:

4           obtaining an omnibus signal comprising multiple input signals mixed  
5 together, wherein one or more the multiple input signals potentially may have an  
6 embedded signal therein;

7           testing the omnibus signal to determine if the omnibus signal includes an  
8 embedded signal therein,

9           wherein each of the multiple input signals of the omnibus signal may  
10 potentially have an embedded signal therein, the multiple signals being mixed  
11 together into the omnibus signal and in a tree-like organizational structure with  
12 each of the multiple input signals is a “leaf” in the tree-like organizational  
13 structure and each “leaf” represents one of the multiple input signals that is  
14 unmixed with other signals.

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16       **16.** A method as recited in claim 15 further comprises locating one of  
17 the multiple input signals that has an embedded signal therein.

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19       **17.** A method as recited in claim 15, wherein the multiple signals are  
20 passed through and consumed, the method further comprising locating one of the  
21 multiple input signals that has an embedded signal therein, the locating occurring  
22 within about thirty seconds or less of consumption of the located signal.

1           **18.**    A method as recited in claim 15 further comprising:  
2            locating one of the multiple input signals that has an embedded signal  
3            therein;  
4            indicating the located signal.

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6           **19.**    A method as recited in claim 15 further comprising:  
7            locating one of the multiple input signals that has an embedded signal  
8            therein;  
9            generating a notification based upon the locating.

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11          **20.**    A method as recited in claim 15 further comprising:  
12          locating one of the multiple input signals that has an embedded signal  
13          therein;  
14          impairing the located signal.

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16          **21.**    A method as recited in claim 15 further comprising:  
17          locating one of the multiple input signals that has an embedded signal  
18          therein;  
19          muting the located signal when that signal is an audio signal.

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21          **22.**    A method as recited in claim 15 further comprising:  
22          locating one of the multiple input signals that has an embedded signal  
23          therein;  
24          impairing one or more of the multiple input signals during the locating;

when the one of the multiple input signals with an embedded signal therein is located by the locating, impairing only the located signal.

23. A method as recited in claim 15, if the testing finds an embedded signal in the omnibus signal, then further comprising performing a tree-search of the tree-like organizational structure to locate which one of the multiple input signals has an embedded signal therein.

24. A method as recited in claim 15, if the testing finds an embedded signal in the omnibus signal, then the method further comprises progressively “walking” up the tree-like organizational structure and testing the signal at each “branch” or “leaf” encountered in the walk up the tree-like organizational structure to determine if the signal at that branch or leaf includes an embedded signal therein.

**25.** A method as recited in claim 15, wherein the type of the one or more the multiple input signals is selected from a group consisting of image, audio, video, multimedia, software, metadata, and data.

26. A computer comprising one or more computer-readable media having computer-executable instructions that, when executed by the computer, perform the method as recited in claim 15.

1       **27.** An embedded-signal detection system comprising a single  
2 embedded-signal detector configured to concurrently receive multiple input  
3 signals, each input signal potentially having an embedded-signal therein, wherein  
4 the detector is further configured to concurrently test the multiple input signals to  
5 determine if at least one of the multiple input signals has an embedded signal  
6 therein.

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8       **28.** A system as recited in claim 27, wherein the detector being further  
9 configured to locate one of the multiple input signals that has an embedded signal  
10 therein.

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12      **29.** A system as recited in claim 27, wherein the multiple signals are  
13 passed through to a signal consumer, the detector being further configured to  
14 locate one of the multiple input signals that has an embedded signal therein, the  
15 locating occurring within about thirty seconds or less of consumption of the  
16 located signal.

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18      **30.** A system as recited in claim 27, wherein the detector being further  
19 configured to locate one of the multiple input signals that has an embedded signal  
20 therein and indicate the located signal.

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22      **31.** A system as recited in claim 27, wherein the detector being further  
23 configured to locate one of the multiple input signals that has an embedded signal  
24 therein and generate a notification based upon the locating.

1           **32.** A system as recited in claim 27, wherein the detector being further  
2 configured to locate one of the multiple input signals that has an embedded signal  
3 therein and impair the located signal.

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5           **33.** A system as recited in claim 27, wherein the detector being further  
6 configured to locate one of the multiple input signals that has an embedded signal  
7 therein, impair one or more of the multiple input signals while it locates the one  
8 signal with an embedded signal therein, and when the one of the multiple input  
9 signals with an embedded signal therein is located, impair only the located signal.

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11          **34.** A system as recited in claim 27, wherein each of the multiple input  
12 signals of the omnibus signal may potentially have an embedded signal therein,  
13 the multiple signals being mixed together into the omnibus signal and in a tree-like  
14 organizational structure with each of the multiple input signals is a “leaf” in the  
15 tree-like organizational structure and each “leaf” represents one of the multiple  
16 input signals that is unmixed with other signals.

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18          **35.** A system as recited in claim 27, wherein the detector is further  
19 configured to perform a tree-search of the tree-like organizational structure, if the  
20 detector finds an embedded signal in the omnibus signal, to locate which one of  
21 the multiple input signals has an embedded signal therein.

1           **36.** A system as recited in claim 27, wherein the detector is further  
2 configured to progressively “walk” up the tree-like organizational structure if the  
3 detector finds an embedded signal in the omnibus signal and is further configured  
4 to test the signal at each “branch” or “leaf” encountered in the walk up the tree-  
5 like organizational structure to determine if the signal at that branch or leaf  
6 includes an embedded signal therein.

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8           **37.** A system as recited in claim 27, wherein the type of the one or more  
9 the multiple input signals is selected from a group consisting of image, audio,  
10 video, multimedia, software, metadata, and data.

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